<Case Report>Cerebral Aneurysm of the Distal Anterior Inferior Cerebellar Artery : Case Report

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Cerebral Aneurysm of the Distal Anterior Inferior Cerebellar Artery: Case Report

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Abstract

A case of an extremely rare aneurysm of the distal segment of the anterior inferior cerebellar artery (AICA) is presented. A 61-year-old woman who was admitted with subarachnoid hemorrhage associated with fourth ventricular hematoma had such an aneurysm, which was successfully clipped. The literature is reviewed.

Introduction

Aneurysms of the distal segment of the anterior inferior cerebellar artery (AICA) are rare. Only 35 such cases have been reported[1-29]. They usually arise from the meatal loop of the AICA at or near the origin of the internal auditory artery. The AICA aneurysms arising from the segments other than the meatal loop are extremely rare with only four cases having been reported; three cases with an aneurysm of the lateral branch[5,17,21] and one of the medial branch[20].

We present a case of a ruptured aneurysm which arose from the medial branch of the AICA, and stress usefulness of thin slice computed tomography (CT) scan and magnetic resonance (MR) imaging for precise localization of the aneurysm.

Case report

A 61-year-old woman was admitted to a local hospital with complaints of sudden, severe occipital headaches, vertigo and vomiting. No neurological deficits were found except for severe neck stiffness and mild disorientation. CT scan showed ventricular hemorrhage, especially marked in the fourth ventricle, and moderate subarachnoid hemorrhage (SAH) (Fig. 1A, B). Angiography revealed a saccular aneurysm of the medial branch of the right AICA, which also supplied the territory of the posterior inferior cerebellar artery (PICA) (Fig. 2). Repeat CT scan on day 14 showed a mild ventricular dilatation and a small hematoma in the right lower cerebellum near the midline, which

Key words: Cerebral aneurysm, Anterior inferior cereballar artery, Distal branch, Magnetic resonance imaging
索引用語: 脳動脈瘤，前下小脳動脈末梢枝，磁気共鳴画像

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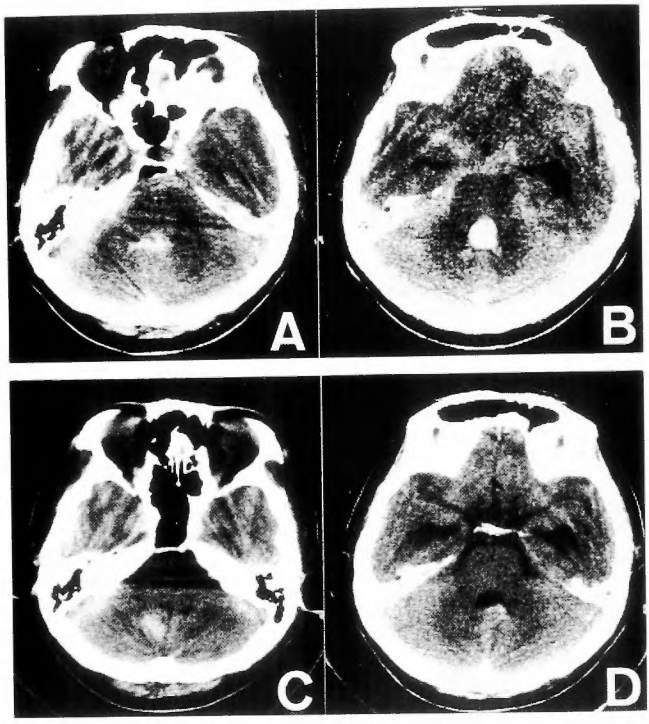

Fig. 1 CT scans on day 0 (A,B) show ventricular hemorrhage, especially marked in the fourth ventricle, and subarachnoid hemorrhage. Repeat CT scans on day 14 (C,D) show a small hematoma in the right lower cerebellum near the midline.

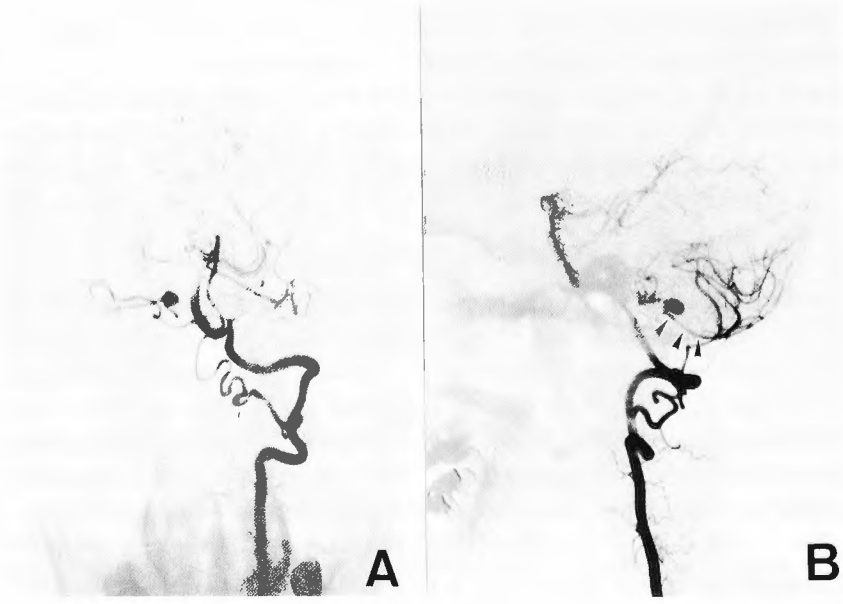

Fig. 2 Angiogram of the vertebral artery shows a saccular aneurysm of the medial branch of the right AICA, which also supplies the territory of the PICA (arrowheads).

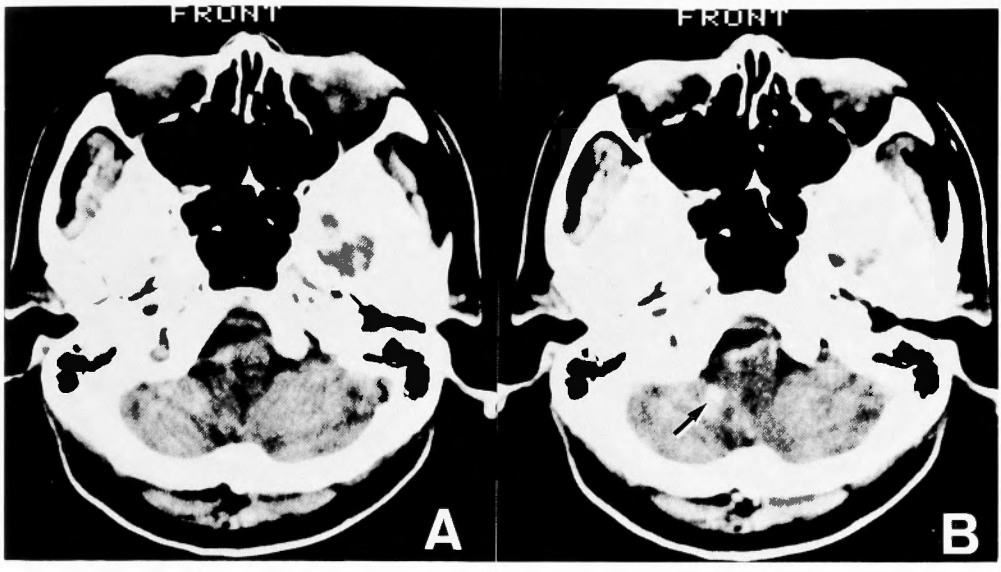

Fig. 3 CT scans with (B) and without (A) contrast enhancement show an aneurysm on the inferior ventromedial surface of the right cerebellum (arrow).

was not seen on the initial CT (Fig. 1C, D). She was transferred to our clinic 20 days after the onset of SAH.

A repeat CT scan with contrast enhancement and MR imaging demonstrated an aneurysm on the anterior surface of the right cerebellar tonsil, laterally to the inferior cerebellar peduncle (Figs. 3 and 4).

A right lateral suboccipital craniectomy was performed on day 28. The meatal loop of the AICA was dissected distally, and its bifurcation into the lateral and medial branches was reached. Further dissection easily revealed the aneurysm, which arose from the medial branch and was buried in the cerebellar tonsil. The neck of the aneurysm was successfully clipped.

Postoperative course was smooth. At postoperative vertebral angiography, neck clipping was complete and the AICA was patent (Fig. 5). The patient was discharged home without neurological deficit.

Discussion

Most of the previously reported distal AICA aneurysms arose from the meatal loop at or near the origin of the internal auditory artery (28/35 cases). Only four cases of the aneurysm arising from the distal AICA other than the meatal loop were reported. In three of them, the aneurysm arose from the lateral branch[5,17,21] and in one from the medial branch[20]. In other three cases, the exact location of the aneurysms was not reported[6,24,28] (Fig. 6).

Technical difficulties of dissection and neck clipping of the AICA aneurysm depend on the location of the aneurysm, for example, the aneurysms developed in the internal acoustic meatus, those tightly adhered to the cranial nerves or buried in the brain stem are difficult to manage. Facial nerve palsy, hearing disturbance, tinnitus and vertigo are reported as the signs and symptoms of the aneurysm of the meatal loop. Postoperative facial nerve palsy and hearing loss are frequent, pro-

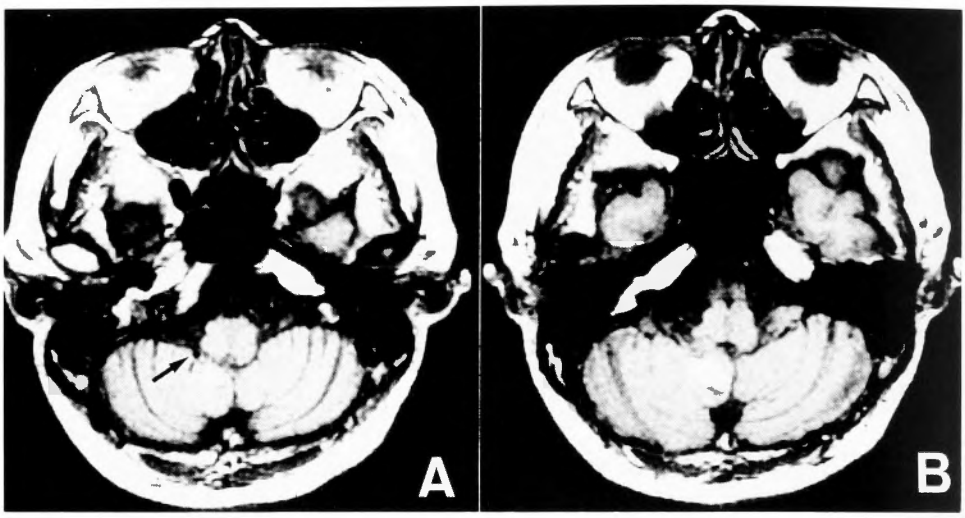

Fig. 4 T-1 weighted MR images (A,B) demonstrate a hematoma in the right cerebellar tonsil and an aneurysm on the ventral surface of the tonsil, laterally to the inferior cerebellar peduncle (arrow).

Fig. 5 Postoperative angiogram of the vertebral artery shows complete clipping of the aneurysm and the patent AICA.

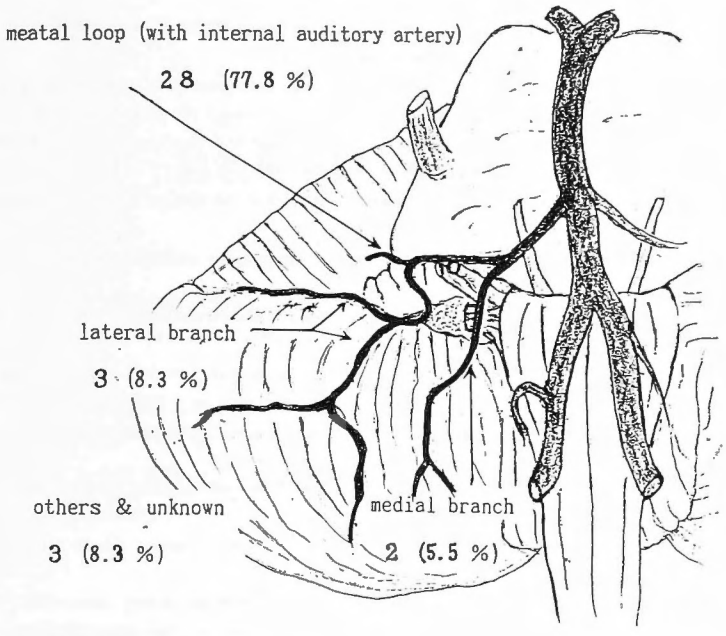

Fig. 6 Schematic location of previously reported distal AICA aneurysms including our case.

bably as the consequence of direct manipulation of the nerves or interruption of the internal auditory artery. Hearing loss is often irreversible[1-3,9,11,19,29]. Our patient did not have any disturbance of facial nerve or acoustic nerve functions, although she had vertigo at the onset of SAH. It is because the aneurysm was located away from those nerves.

The aneurysm of our case might not fit distal AICA aneurysm in a strict sense, because its parent artery also supplied the territory of the PICA. Kamii et al[14] reported a similar case in which the aneurysm arose near the meatal loop of the so-called AICA-PICA, and its dome pointed inferiorly and adhered to the vagus group. Lower cranial nerve palsy had occurred prior to the onset of SAH. Various reported signs and symptoms of distal AICA aneurysms such as sixth to 12th cranial nerve palsies[17], trigeminal neuralgia[2] and trigeminal sensory loss[28] apparently depend on the anatomical course of the AICA.

It is very important to determine the precise location of the distal AICA aneurysm preoperatively in order to tailor the operative approach. In our experience, thin slice CT scan with and without contrast as well as MR imaging were very useful for localizing the aneurysm. Although it may be difficult to differentiate a small tumor such as an acoustic neurinoma[4,7,9,28] from the aneurysm at the meatal loop by CT scans in the absence of SAH, MR imaging seems to be superior to CT for the diagnosis in such cases.

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和文抄録

前下小脳動脈末梢部脳動脈瘤の1例

滋賀医科大学　脳神経外科
京嶌　和光，松田　昌之，半田　譲二

極めてまれな前下小脳動脈末梢部の破裂脳動脈瘤の1例（61歳，女性）を報告する．くも膜下出血と第4脳室内血腫を認め，MRI および造影 CT で小脳前面に存在する動脈瘤の正確な部位診断ができ，安全にクリッピング術がなされた．

文献上，この部位の脳動脈瘤の大部分は前下小脳動脈外側枝の内耳孔近傍に発生し，難聴と顔面神経麻痺を伴うことが多いが，本例では内側枝に発生していた．さらに動脈瘤の正確な部位診断のための MRI の有用性を強調した．